

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claim in the application.

Listing of claims:

1.-48. (Canceled)

49. (Previously Presented) A membrane valve comprising:

a valve case including a valve seat, the valve seat having an opening, one or more ribs extending across the opening;

a shutter disk manufactured from a flexible material, the shutter disk engaging one of the one or more ribs;

an outflow duct coupled to the valve case and enclosing the valve seat, flow communication between the valve seat and the outflow duct being controlled by a displacement of the shutter disk, the outflow duct having an openable central portion connected to a plurality of outflow peripheral portions; and

a retaining member extending from the central portion of the outflow duct, the retaining member causing a portion of the shutter disk to remain substantially in contact with the valve seat during fluid passage through the valve seat.

50. (Previously Presented) The membrane valve of claim 49, wherein the retaining member is a stop rib.

51. (Previously Presented) The membrane valve of claim 50, wherein the stop rib has a peripheral edge substantially in contact with the stop rib, and wherein the peripheral edge is square, tapered, beveled, or rounded.

52. (Previously Presented) The membrane valve of claim 50, wherein the stop rib has a peripheral edge substantially in contact with the stop rib, and wherein the peripheral edge is continuous, discontinuous, toothed, or comb-shaped.

53. (Previously Presented) The membrane valve of claim 49, wherein the shutter disk engages one of the one or more ribs by having a clamping pin extend from the shutter disk and engage a mating aperture in the rib.

54. (Previously Presented) The membrane valve of claim 49, wherein the retaining member is aligned with one of the one or more ribs.

55. (Previously Presented) The membrane valve of claim 49, further comprising an annular wall in the valve seat extending outwardly of the valve case, the annular wall surrounding the opening on one side, a peripheral sealing lip extending from the shutter disk and engaging the annular wall when no fluid flows through the opening.

56. (Previously Presented) The membrane valve of claim 49, wherein the coupling of the outflow duct with the valve case defines a tubular conduit, and wherein the tubular conduit extends laterally in relation to the valve seat.

57. (Previously Presented) The membrane valve of claim 49, wherein the central portion is openable by being removable from the outflow peripheral portions.

58. (Previously Presented) The membrane valve of claim 49, wherein the central portion is openable by being hinged to the outflow peripheral portions.

59. (Previously Presented) The membrane valve of claim 49, wherein the shutter disk has an elongated shape, the elongated shape having the longest diameter oriented in a direction parallel to the longitudinal axis of the outflow duct.

60. (Previously Presented) A second stage pressure reducer for two stage pressure regulators comprising:

- a chamber for storing and delivering breathing gas to a diver;

- an outlet connecting the chamber to a mouthpiece;

- an inlet connecting the chamber to a first stage pressure reducer, the first stage pressure reducer being further connected to a high pressure source of the breathing gas;

- a spring valve housed within the chamber, the spring valve regulating the inflow of the breathing gas into the chamber from the first stage pressure reducer, the spring valve being in an open condition when pressure within the chamber falls below a predetermined level and being in a closed condition otherwise; and

- a membrane valve regulating the outflow of spent gas from the diver, the membrane valve being housed in the case and comprising,

 - a valve case including a valve seat, the valve seat having an opening, one or more ribs extending across the opening;

 - a shutter disk manufactured from a flexible material, the shutter disk engaging one of the one or more ribs;

 - an outflow duct coupled to the valve case and enclosing the valve seat, the coupling of the outflow duct with the valve case defining a tubular conduit, flow communication between the valve seat and the outflow duct being controlled by a displacement of the shutter disk, the outflow duct extending laterally in relation to the valve seat, the outflow duct further having an openable central portion connected to a plurality of outflow peripheral portions; and

 - a retaining member extending from the central portion of the outflow duct, the retaining member causing a portion of the shutter disk to remain substantially in contact with the valve seat during passage of the spent gas through the valve seat.

61. (Previously Presented) The second stage pressure reducer of claim 60, wherein the retaining member is a stop rib.

62. (Previously Presented) The second stage pressure reducer of claim 60, wherein the valve seat is situated in a planar portion of the valve case.

63. (Previously Presented) The second stage pressure reducer of claim 62, wherein the planar portion is inclined in relation to the longitudinal axis of the mouthpiece.

64. (Previously Presented) The second stage pressure reducer of claim 60, wherein the outflow peripheral portions direct the spent gas at an angle not perpendicular to the longitudinal axis of the mouthpiece.

65. (Previously Presented) The second stage pressure reducer of claim 60, wherein the central portion is openable by being removable from the outflow peripheral portions.

66. (Previously Presented) The second stage pressure reducer of claim 60, wherein the central portion is openable by being hinged to the outflow peripheral portions.

67. (New) The membrane valve of claim 50, wherein the stop rib comprises two protrusions, the two protrusions extending from opposite sides of the stop rib.

68. (New) The membrane valve of claim 49, wherein the retaining member comprises a row of columnar elements.

69. (New) The membrane valve of claim 49, wherein the retaining member comprises two stop ribs spaced one from the other.

70. (New) The membrane valve of claim 49, wherein the retaining member comprises two rows of columnar elements spaced one from the other.

71. (New) The second stage pressure reducer of claim 61, wherein the stop rib comprises two protrusions, the two protrusions extending from opposite sides of the stop rib.

72. (New) The second stage pressure reducer of claim 60, wherein the retaining member comprises a row of columnar elements.

73. (New) The second stage pressure reducer of claim 60, wherein the retaining member comprises two stop ribs spaced one from the other.

74. (New) The second stage pressure reducer of claim 60, wherein the retaining member comprises two rows of columnar elements spaced one from the other..